An assessment towards adoption and diffusion of smart wearable technologies by consumers: the cases of smart watch and fitness wristband products

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Abstract

Technology is the vital criteria to boosting the quality of life for everyone from new-borns to senior citizens. Thus, any technology to enhance the quality of life society has a value that is priceless. Nowadays Smart Wearable Technology (SWTs) innovation has been coming up to different sectors and is gaining momentum to be implemented in everyday objects. The successful adoption of SWTs by consumers will allow the production of new generations of innovative and high value-added products.

The study attempts to predict the dynamics that play a role in the process through which consumers accept wearable technology. The research build an integrated model based on UTAUT2 and some external variables in order to investigate the direct and moderating effects of human expectation and behaviour on the awareness and adoption of smart products such as watch and wristband fitness. Survey will be chosen in order to test our model based on consumers. In addition, our study focus on different rate of adoption and expectation differences between early adopters and early majority in order to explore those differences and propose techniques to successfully cross the chasm between these two groups according to "Chasm theory". For this aim and due to lack of prior research, Semi-structured focus groups will be used to obtain qualitative data for our research.

Originality/value: *To date, a few research exists addressing the adoption of smart wearable technologies. Therefore, the examination of consumers behaviour towards SWTs may provide orientations into the future that are useful for managers who can monitor how consumers make choices, how manufacturers should design successful market strategies, and how regulators can proscribe manipulative behaviour in this industry.*

Keywords: *wearable technology, smart technologies, smart wristband, smart watch UTAUT2, Chasm theory.*

Introduction

Technology use is one of the most important behaviours for increasing the quality of life for people from different backgrounds [1]. Nowadays, Smart wearable technologies are promisingly evolving and becoming essential in our lives. The growing popularity of mobile technologies has led to emergence of wearable technologies [2]. The recent technological progress in the worldwide cause to boost popularity of wearable devices such as smart watch and fitness wristband, which have been granted anywhere-anytime accessibility to information. The meaning of "mobility" is evolving from exclusively portable to seamlessly wearable technology, advancing the ubiquity of personal communication to the next level [3]. Wearable technologies are fully functional, self-contained electronic devices that can be worn, attached to the body, allowing the user access information anytime and anywhere [4].

Wearable technologies are still in its early stage and mostly being used as a tracking health and fitness activities. In particular, smart watches (e.g. Samsung Galaxy Gear, Pebble E-Paper Watch) have been highly hyped in the information and communications technology (ICT) industry for a multi-functionality that appeals to a broad range of user interests, including not only fitness, health monitoring, and location

tracking but also extended communication and "smart" features [5]. Recent polls on smart watch adoption forecast that the market will continue to grow at an exponential rate: 15 million units are expected to be sold globally in 2014, 91.6 million by 2018, and 373 million by 2020 [6].

Markets for smartwatches and other wearables are growing. IDC (2015a) predict the worldwide market for wearables to reach more than 111 million units in 2016, which is an increase of 44% compared to 2015. More than eighty percent of these devices will be wrist-worn devices – i.e., smartwatches or smart wristbands. A Google trend-analysis also reflects a tremendous increase in searches for 'smartwatch' and related terms, supporting the results of the market research. Although forecasts vary with regard to forecasted numbers and definitions, immense growth rates are consistently identified for the near future [7, 8]. As the smart wearable technologies are growing rapidly, it is vital to understand the human interaction with these new devices. However, although reports present increased demand for smartwatches in the future, current sales estimates are still relatively low [7]. Little is known about what impacts this difference in forecasts and sales and subsequently research is needed to more comprehensively understand this gap of technology that is still in the beginning stages of its product lifecycle. In particular, the question of what drives the adoption of smartwatches remain unanswered between different segments of technology and market.

Therefore, focusing on the current phase of market, analyzing person's psychographics should be the best strategy and tactics for reaping the reward of this mainstream market. According to the model of " Technology Adoption Life Cycle" (TALC), making commutation and marketing shift between any two adoption sections can be extremely hard due to adopt a new strategies and recognize all the differences for the each segment [9]. One of the biggest problem during this transfer period is the gap from following to use the group on the left part of the model (TALC) as a reference to penetrate the segment on the right. The biggest gap between the all adoption groups are belong to visionaries (Early adopters) and pragmatics (early majority). Penetrating to market segment can be tough challenge due to differences between new target customers based on psychographic profile [9, 10]. Therefore, in order to fill this chasm, those characteristics of visionaries that alienate pragmatists need to be observed and considered.

In addition, as wearable technology is becoming more commercialized, it is necessary to investigate how previous research regarding the factors of acceptance theory can be used in the context of wearable technologies. Consequently, it is crucial to examine factors influencing consumers' acceptance of smart devices among early and mainstream customers' profiles. This study thereby attempt to create a research model enabling a prediction of smart watch usage, with implications for the adoption of future mainstream market according to chasm theory. The resulting analysis offers a number of contributions to research and managerial implications. First, few studies have offered analysis of smart wearable technologies from initial adoption to successful diffusion in the market. Therefore, we aim to contribute to smart wearables research by providing insights into the adoption processes and conditions that make such technology overcome the initial pilot stages. Second, we aim to challenge existing boundaries of diffusion of innovation research, between innovators and

mainstream market consumers in particular by crossing the chasm, identifying those factors that mainstream market face in seeking to diffuse the technology to a broader market. Finally, we provide insights on which are the key drivers crossed the chasm by building a customized model based on UTAUT2 in order to test psychographics profile of each segments of consumers.

Figure1: Research model
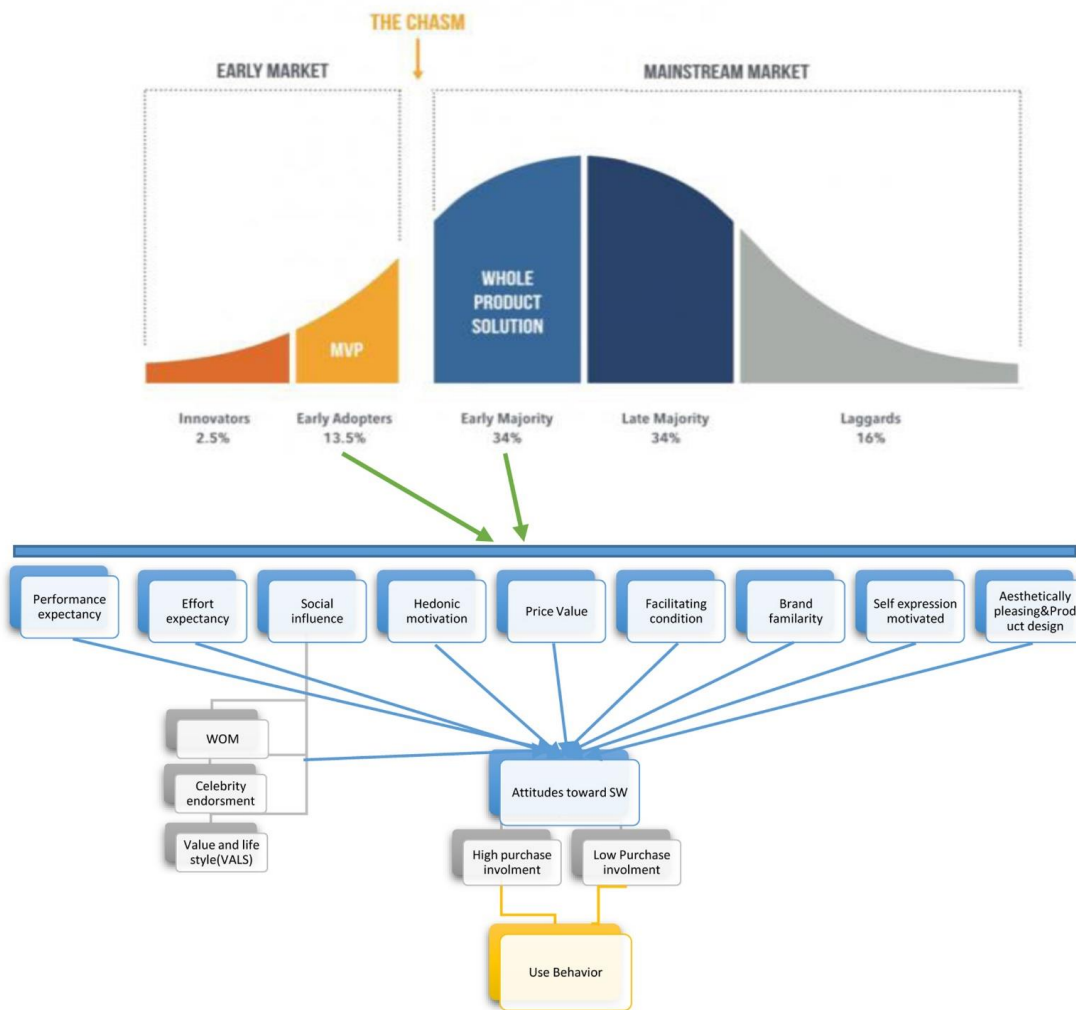
Related work

Despite the wide use of technology adoption's theories to investigate new technologies, limited research has applied for analysis of consumers' adoption in the area of smart wearable devices such as smart watch and smart wristbands. Nevertheless, this section presents a brief summary of the fragmented research on the smart wearable technologies.

Bodin and Gemperle [14] presented one of the first study in the topic of smart wearables. Their research described that functionality plays a key factor in the perceived comfort of consumers. Later, Ko, Sung, & Yun [15] examined the effect of perceived risks and benefits on attitudes and purchase intentions for smart jacket and shoes. The study showed that attitude towards purchase intention is positively influenced by compatibility and is negatively affected by devices' perceived complexity. Another study by Turhan [16] tested TAM and TPB theories for the smart bra and t-shirt adoptions by Turkish students. The study found that perceived usefulness and behavioural control have an indirect effect on purchase intention while subjective norms and perceived behavioural have a direct influence on attitude and purchase intention. In addition, subjective norms, perceived usefulness, attitude and perceived behavioural control appear to be shown by a set of salient beliefs for the both products. In the study by Wang et al [17], an extended technology acceptance model in the context of wearable technologies is used. The model proved that perceived usefulness is the most significant variable that affects consumers' attitudes towards wearable technologies acceptance while Nasir and Yurder [18] identified that perceived benefits and perceived risk play an important role in the adoption wearable healthcare devices by consumers.

Kim and Shin [3] carried out one of the extensive research in smart watch. The research replicates basic TAM and clarified subcultural appeal and costs of the device. Moreover, the authors identified various antecedents to perceived usefulness and perceived ease of use. Rauschnabel et al [11] run two different research regarding google glass according to "big five theory" and TAM. The first study showed descriptive norms and expected functionality influence on adoption intention and the second study indicated that functional benefits, ease of use and brand drive the attitudes towards using smart glasses. Jee and Sohn [19] found that concerning wearable devices some factors such as low to middle priced with aesthetic character needs to be observed by firms in order to successfully targeting segmented consumers. The study by Yang and his colleagues [20] presented that perceived usefulness, social image and enjoyment seems to have influence on perceived benefits of consumers for wearable devices. Finally, Gu et al [21] explored factors that impact on trust of consumers for accepting wearable commerce by UTAUT2. This research clearly showed that performance expectancy, hedonic motivation and facilitating condition impact in initial trust of consumers while privacy concerns has a negative impact on it.

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